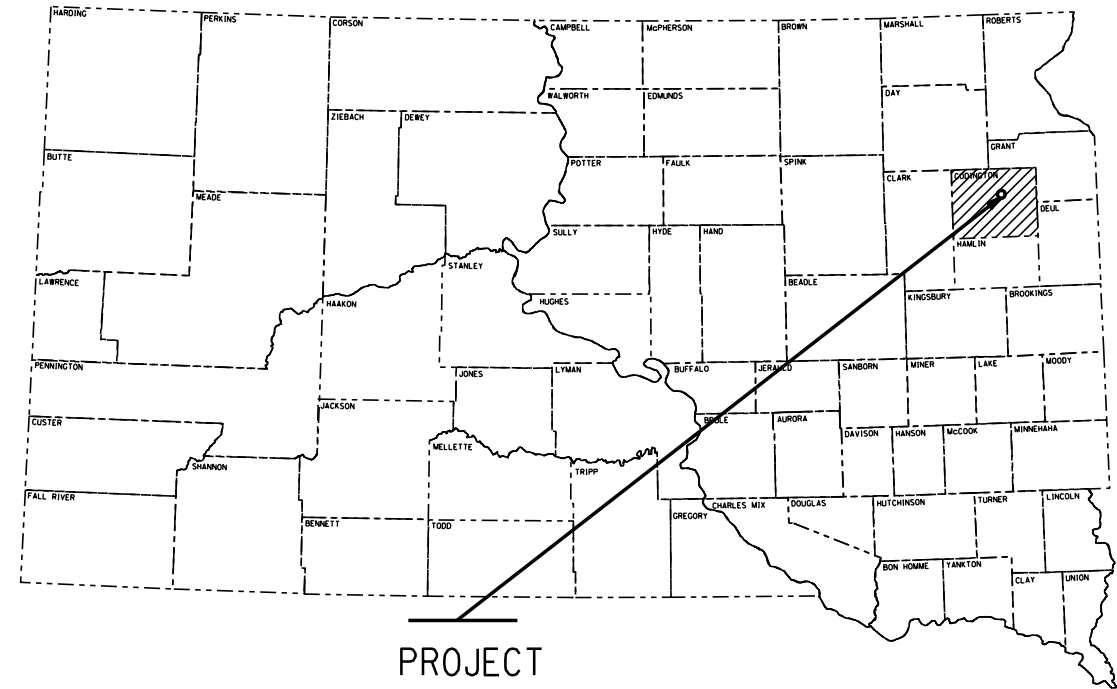


PLOT SCALE - 1"=10000'

PLOTTED FROM - TRAB17882



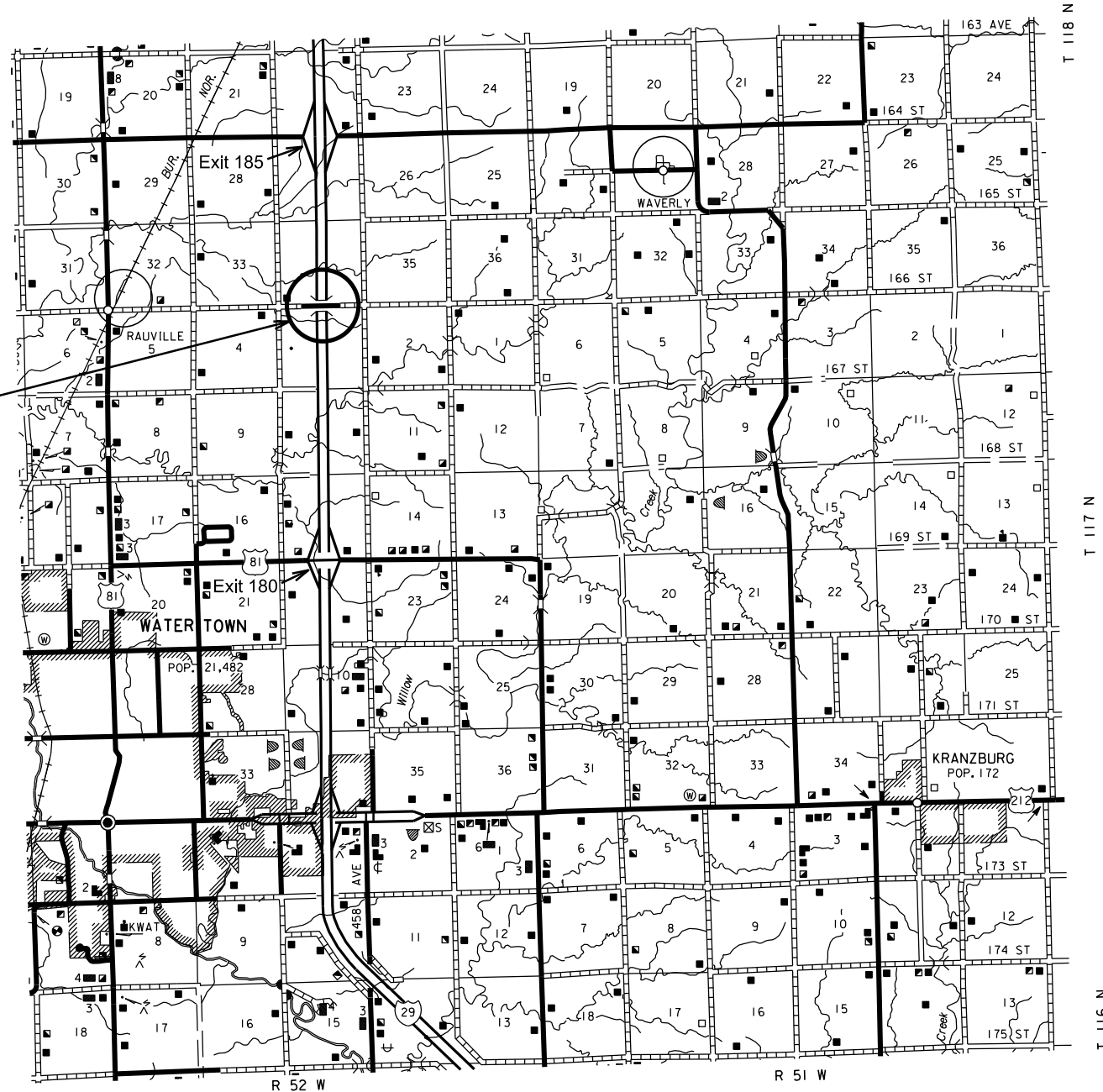
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT 029 N-168
INTERSTATE 29 SBL
CODINGTON COUNTY
IMPACT DAMAGE REPAIR
PCN i24d

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 N-168	1	15
Plotting Date: 03/01/2012			

INDEX OF SHEETS

Sheet No. 1	Title Sheet and Layout Map
Sheet No. 2	Estimate of Quantities and Traffic Control Notes
Sheet No. 3	Traffic Control Details
Sheet No. 4-12	Impact Damage Repair Details Str. No. 15-215-120
Sheet No. 13-15	Original Construction Plans Str. No. 15-215-120

Project 029 N-168
Str. No. 15-215-120
I 29 - MRM 183.94



DESIGN DESIGNATION	
ADT (2010)	3165
ADT (2030)	3525
DHV	415
D	100%
T DHV	9.8%
T ADT	21.6%
V	75 M.P.H.

STORM WATER PERMIT
(None Required)

FILE - ... \CODN124D\124D_COVER_SHEET.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 N-168	2	15

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0350	Remove and Replace Web	2	Each
410E0365	Remove and Replace Transverse Stiffener	4	Each
410E0520	Surface Grinding of Structural Steel	21	SqIn
410E3010	Magnetic Particle Weld Inspection	56	In
410E3020	Ultrasonic Weld Inspection	6.2	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	42	SqIn
412E0100	Bridge Repainting, Class I	Lump Sum	LS
412E0500	Paint Residue Containment	Lump Sum	LS
634E0010	Flagging	5	Hour
634E0100	Traffic Control	457	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

TRAFFIC CONTROL

One lane of traffic shall be maintained in the south bound lanes of I-29 at all times. The lane closure shall only be in place when work is actively ongoing and the lane closure shall be removed during non-working hours. Diverting traffic onto the shoulder will not be allowed.

Should a situation develop where it is not possible to remove the lane closure during overnight hours, the Contractor shall be responsible for installing temporary pavement markings as depicted on Standard Plate 634.63. The cost of the temporary pavement markings shall be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

The Contractor's equipment will be required to enter and leave the project only at interchanges. Crossing of the median will not be allowed.

A maximum of one set of signing and one arrow board will be measured and paid for.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost of this work shall be incidental to the various contract items unless otherwise specified in the plans. Delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be as near the right-of-way line as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Work activities during non-daylight hours are subject to prior approval.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP Report 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Traffic Control units, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

COORDINATION OF WORK

The North and South bound lanes of I-29 from MRM 179.3 to MRM 193.7 are scheduled for installation of Epoxy Pavement Markings during the 2012 construction season. This work is under contract to PCiRoads, LLC of St. Michael, MN (763-497-6100) as part of SDDOT project IM 0297(32)179, PCN 00GR.

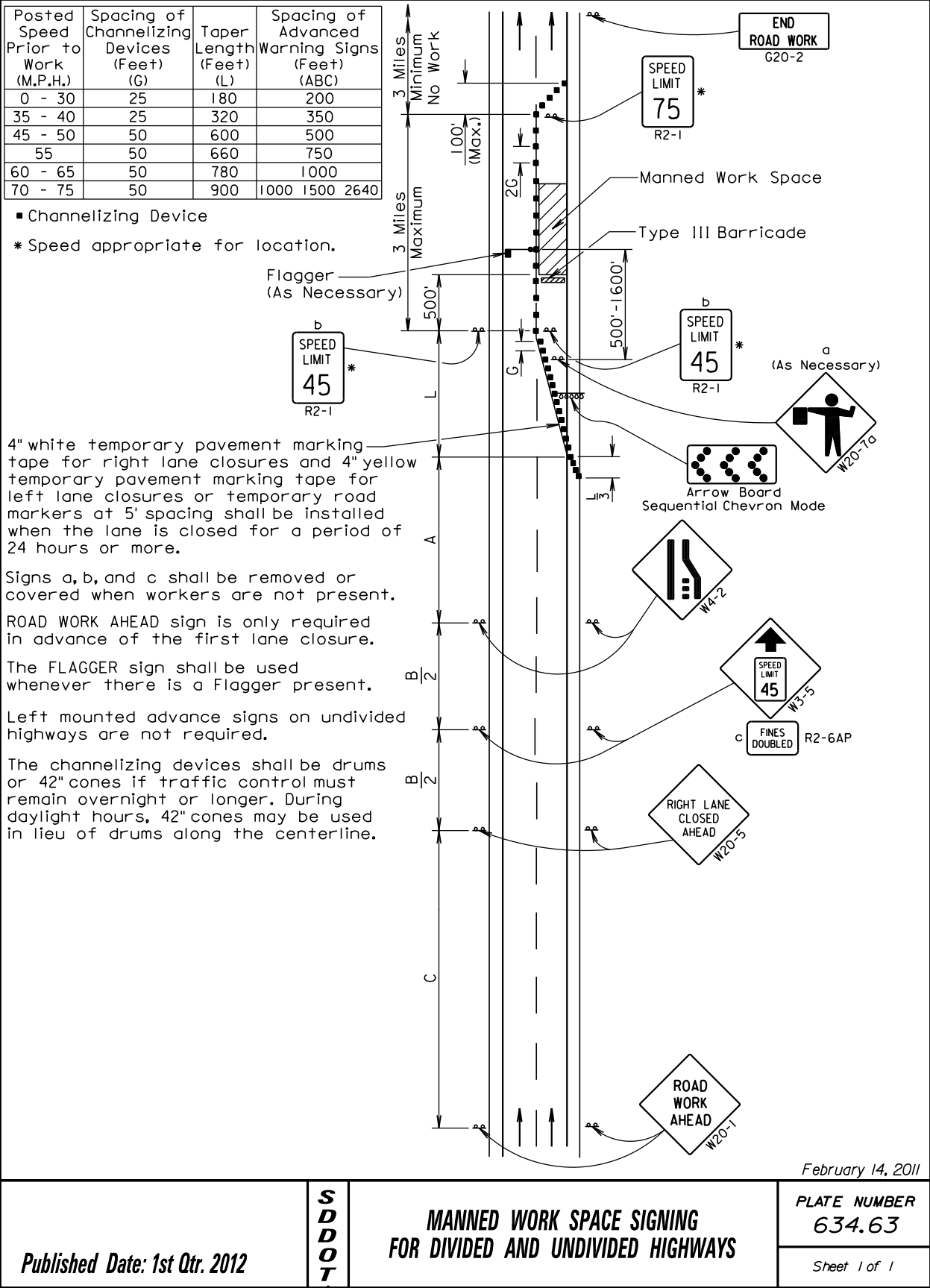
The Contractor of this impact damage repair project shall coordinate work with PCiRoads, LLC so as not to cause interference with the installation of the Epoxy Pavement Markings.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 N-168	3	15

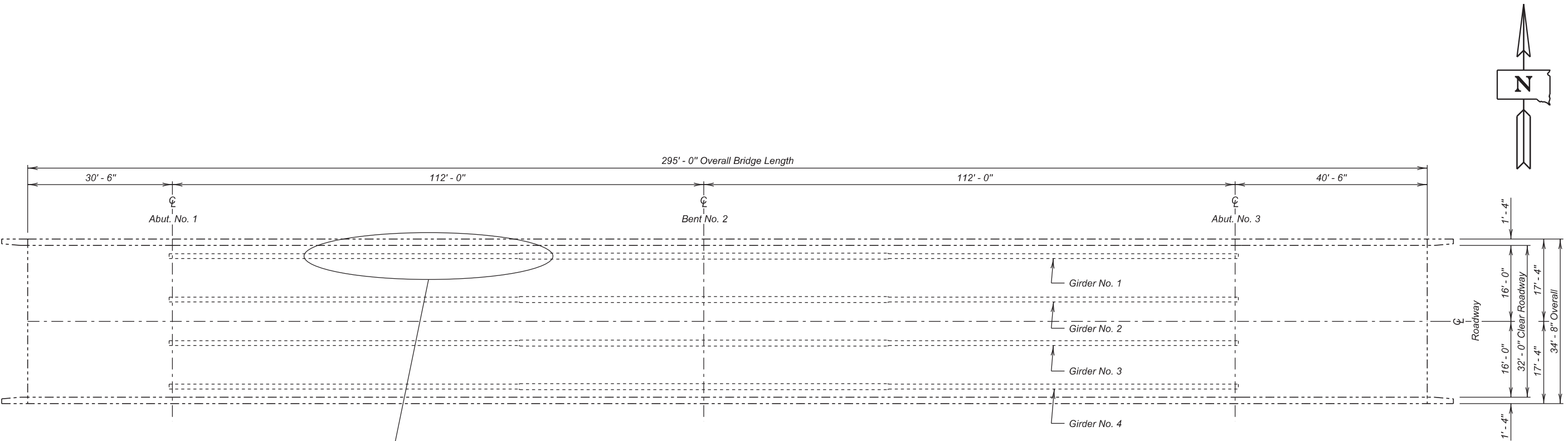
ITEMIZED LIST FOR TRAFFIC CONTROL -INTERSTATE AND EXPRESSWAYS

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	48" x 24"	END ROAD WORK	1	24	24
R2-1	36" x 48"	SPEED LIMIT ##	3	29	87
R2-6aP	36" x 24"	FINES DOUBLE	2	20	40
W3-5	48" x 48"	REDUCED SPEED LIMIT AHEAD	2	34	68
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	2	34	68
W20-5	48" x 48"	LT. OR RT. LANE CLOSED ##### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	1	34	34
TOTAL UNITS					457

If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:
 Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
 If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (sq ft) x 3.
 If a sign measures between 23H" and 37H" the units per sign will be computed as sign size (sq ft) x 1.2 +15.

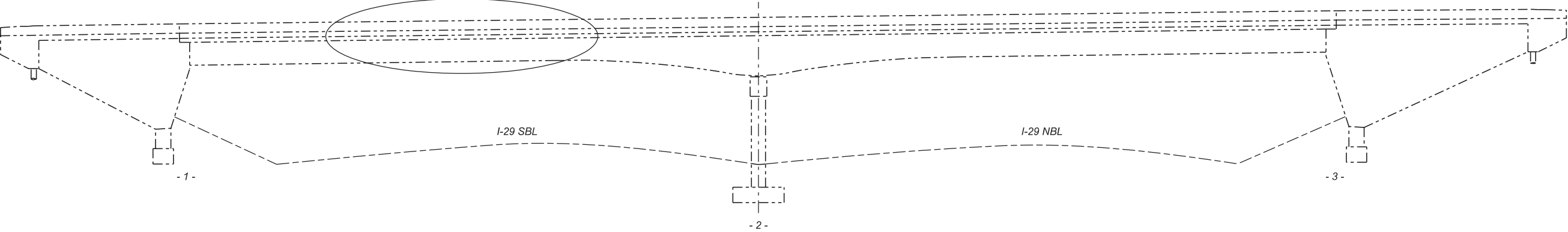


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	4	15



Approximate Location of Impact. See
Sheet Nos. 6 thru 9 of 12 for Details.

PLAN



ELEVATION

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Repair
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
- Sheet No. 6 - Girder No. 1 Repair Details
- Sheet No. 7 - Girder No. 1 Web Repair Details
- Sheet No. 8 - Girder No. 1 Stiffener Repair Details
- Sheet No. 9 - Girder No. 1 Stiffener Repair Details (Continued)
- Sheet Nos. 10 - 12 - Original Construction Plans

LAYOUT FOR REPAIR
FOR

295' - 0" CONT. COMP. GIRDER BRIDGE
32' - 0" ROADWAY 0° SKEW
OVER I-29 SEC. 3&34-T1 17N-T1 18N-R52W
STR. NO. 15-215-120 029N-168
PCN i24d

CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION

MARCH 2012

1 OF 12

PLANS BY:
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY
DJS
CODNI24D

DRAWN BY
JWL
I24DLA01

CHECKED BY
EJA

Kevin N. Goeden
BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0350	Remove and Replace Web	2	Each
410E0365	Remove and Replace Transverse Stiffener	4	Each
410E0520	Surface Grinding of Structural Steel	21	SqIn
410E3010	Magnetic Particle Weld Inspection	56	In
410E3020	Ultrasonic Weld Inspection	6.2	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	42	SqIn
412E0100	Bridge Repainting, Class I	Lump Sum	LS
412E0500	Paint Residue Containment	Lump Sum	LS

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 17th Edition using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.
- All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2010 unless otherwise noted in this plan set.

SHOP PLANS

Shop plans shall be required as specified by Section 410.3.A of the Standard Specifications.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure is a paint containing lead. The Contractor should plan his/her operations accordingly and inform his/her employees of the hazards of lead exposure.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

GENERAL CONSTRUCTION

- Welder certification shall be in accordance with section 410.3.D of the Construction Specifications.
- The web plates and stiffener plates shall be ASTM A709 Gr. 36 T2.

SCOPE OF BRIDGE WORK

The work for this project in general involves, but is not limited to, the following:

- Provide traffic control per the plans.
- Clean Girder No. 1, stiffeners, and diaphragms in the work affected area with solvent. Power tool clean to remove the paint and clean the area around all locations to be nondestructively tested.
- Inspect all visible and potential cracks using Nondestructive Testing (NDT) of Girder No. 1 within and around the work limits shown as approved by the Engineer. NDT girder flange in areas to be ground to verify no cracks are present.
- Detach plan specified portion of the existing diaphragm from vertical stiffeners at plan shown locations.
- Remove plan specified portion of stiffeners on Girder No. 1.
- Remove and replace plan specified web sections of Girder No. 1.
- Replace plan specified portion of stiffeners on Girder No. 1.
- Reattach diaphragm to web stiffener plates at plan specified locations on Girder No. 1.
- Remove, by grinding, nicks and gouges in the bottom flange of Girder No. 1 where directed by the Engineer.
- Paint all work affected areas.

SEQUENCE OF WORK

All work on this structure shall be accomplished under traffic with the traffic control as shown elsewhere in the plans.

- Clean the girder, stiffeners and diaphragms in the work affected area with solvent. Power tool clean to remove the paint and clean the area around all locations to be nondestructively tested.

SEQUENCE OF WORK (CONTINUED)

- Inspect all visible and potential crack tip locations in and around the work affected area using visual inspection and Magnetic Particle Inspection. Additional locations may be tested with Magnetic Particle Testing as directed by the Engineer. The Nondestructive Testing shall clearly identify all cracks and flaws encountered. Notify SD DOT Bridge Construction Engineer if any cracks or crack tips are located in the girder flange. Visibly mark all locations for viewing by the Bridge Construction Engineer.
- After work limits are verified by NDT, detach diaphragm from vertical stiffeners to be repaired and remove and replace plan specified portions of the stiffeners and web on Girder No. 1.
- Reattach diaphragms to stiffeners that were repaired.
- Grind out surface defects from the over-height impact as directed by the Engineer. Grinding shall only remove sharp edges and stress risers while limiting the amount of section reduction.
- Inspect new fillet welds placed with the diaphragm, stiffener and web repairs with Visual and Magnetic Particle Inspection. Visually inspect and Ultrasonic Test the groove welds placed with the web repair. If repair is needed, repair these new welds per the Specifications. Visually inspect and magnetic particle inspect all surface grinding areas on the flanges. Notify SD DOT Bridge Construction Engineer if any cracks or crack tips are located in the girder flange.
- Paint all work affected areas.

FIELD WELDING PROCEDURES

- Approved Welding Procedure Specifications (WPS) will be required for this project, using the Shielded Metal Arc Welding (SMAW) process and an approved E7018 electrode from Table 4.1 of the Bridge Welding Code. The proposed WPS's for this project shall be submitted on Form N-2, from Annex N of the Bridge Welding Code, to the Bridge Construction Engineer for approval at least 2 weeks prior to construction.
- Welders shall be qualified in accordance with Section 410.3.D of the Construction Specifications.
- Preparation of the base metal prior to welding shall be in accordance with Clause 3 of the Bridge Welding Code. Existing paint shall be removed a distance of 2 inches from each side of the weld.

ESTIMATE OF STRUCTURE QUANTIES AND NOTES
FOR
295' – 0" CONT. COMP. GIRDER BRIDGE

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MARCH 2012

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FIELD WELDING PROCEDURES (CONTINUED)

4. Preheat will be required. Preheat and interpass temperature requirements shall be in accordance with Clause 4.2 of the Bridge Welding Code. The minimum preheat and interpass temperature shall be 320 degrees F for welds to the 1 3/8" girder flanges and 300 degrees F for welds to the 5/16" girder web as determined from Annex G of the Bridge Welding Code for high restraint conditions. Temperature indicating crayons shall be the minimum acceptable method for monitoring preheat and interpass temperatures.
5. SMAW electrode atmospheric exposure requirements shall comply with Clause 4.5 of the Bridge Welding Code. Electrodes shall be purchased in hermetically sealed containers. If the container shows evidence of damage, the electrodes shall be dried in a drying oven for at least one hour at temperatures between 700 and 800 degrees F before they are used. Immediately after opening a hermetically sealed container or removal of the electrodes from a drying oven, electrodes shall be stored in ovens at a temperature of at least 250 degrees F. Electrodes exposed to the atmosphere upon removal from drying or storage ovens or hermetically sealed containers shall be used within four hours maximum or redried at 450 to 550 degrees F for two hours minimum. Electrodes exposed to the atmosphere for periods less than four hours may be returned to a storage oven and maintained at a minimum of 250 degrees F for a minimum of four hours before reissue. Electrodes shall be redried no more than one time. Electrodes which have been wet shall not be used.
6. All welds shall be cleaned in accordance with Clause 3.11 of the Bridge Welding Code. Completed welds and adjacent areas shall be cleaned of all weld splatter, slag, smoke and heat affected paint. No intermittent or "stitch" welds will be allowed.
7. E7018 electrodes shall be used for tack welds. The size of tack welds shall not be greater than 5/16". Tack welds shall be positioned so they will be incorporated into, and re-melted by, the final weld. This applies to run-off tabs also. Tack welds shall be thoroughly cleaned prior to any weld placement.
8. Groove joint fit-up tolerances shall be +1/16", -1/8" for root opening and +10°, -5° for the bevel angle for Joint Designation B-U2 as per Clause 3.3.4 of the Bridge Welding Code. The removal dimensions of the damaged web material and the dimensions of the new web plates shall be closely controlled to achieve the specified fit-up tolerances. All groove welds shall be ground to a flush contour. Grinding shall be longitudinal. Transverse grinding will not be allowed.

WELD INSPECTION & NONDESTRUCTIVE TESTING (NDT)

1. The Contractor shall be responsible for retaining a qualified Testing Agency to perform Visual, Magnetic Particle (MT), and Ultrasonic (UT) inspection of new welds and to locate existing and potential crack tips. Inspectors performing Visual, MT and UT inspection and crack tip location shall be certified in accordance with Section 410.3.D of the Construction Specifications. The Contractor shall submit the Testing Agency to the Department at the Preconstruction meeting for approval of the Bridge Construction Engineer.
2. All Nondestructive Testing (NDT) and inspection shall be performed in accordance with Clause 6 of the Bridge Welding Code. The MT inspection shall be performed by the yoke method using half-wave rectified direct or alternating current. Existing paint shall be removed from the steel surfaces that require NDT. MT inspection results shall be reported on Form N-7 of Annex N and UT results shall be reported on Form F-4 of Annex F of the Bridge Welding Code.
3. Visual testing will be performed in the plan designated areas on the web, stiffeners and flanges prior to any work. Cracks and potential cracks in this visual testing area shall be prepared for additional testing using Magnetic Particle (MT) inspection. All cracks and the corresponding crack tip locations shall be marked clearly on the structure for verification by the Engineer. Both inspections, Visual and MT, shall be used to verify the work limits shown by the plans. If crack tips or flaws exist outside of the plan shown work area, the Bridge Construction Engineer shall be immediately notified for recommendations for corrective action. If crack tips and flaws are verified to fall within the work limits, the Contractor will be instructed to follow the plans as shown.
4. New fillet welds shall be 100% visually inspected and 100% magnetic particle inspected. Based on the results of the magnetic particle and visual inspection, the Bridge Construction Engineer will determine the acceptability of the completed fillet welds and any recommended repairs. Rejectable defects in new welds shall be repaired in accordance with the Bridge Welding Code. Repaired welds shall be re-inspected after all repairs are complete. The estimated length for MT inspection is 56 linear inches.
5. All surfaces of the bottom flange that were ground to remove sharp edges, nicks and gouges will be visually inspected and 100% magnetic particle inspected. The visual and magnetic particle inspection will be used to determine the acceptability of the surface grinding. The estimated area for MT inspection, impact damage, is 42 square inches.

WELD INSPECTION & NONDESTRUCTIVE TESTING (NDT) (CONTINUED)

6. The new groove welds in the web and stiffeners shall be Ultrasonically inspected. Based on the results of the ultrasonic and visual inspection, the Bridge Construction Engineer will determine the acceptability of the completed welds and any recommended repairs. Rejectable defects in new welds shall be repaired in accordance with the Bridge Welding Code. Repaired welds shall be re-inspected after all repairs are complete. The estimated length for UT inspection is 6.2 linear inches. All costs including labor, equipment and any incidentals necessary to perform the visual and ultrasonic inspection of these groove welds shall be incidental to the contract unit price per inch for ULTRASONIC WELD INSPECTION.
7. All costs including labor, equipment and any incidentals necessary to perform the visual inspection and magnetic particle inspection on the new fillet welds shall be incidental to the contract unit price per inch for MAGNETIC PARTICLE WELD INSPECTION.
8. All costs including labor, equipment and any incidentals necessary to perform the visual inspection and magnetic particle inspect potential and visible crack tip locations on the plan designated area adjacent to the impact area shall be incidental to the contract unit price per square inch for MAGNETIC PARTICLE WELD INSPECTION, IMPACT DAMAGE REPAIR.
9. The total plans quantity for MT and UT weld inspection is only an estimate. The weld inspection will be measured and paid for as MAGNETIC PARTICLE WELD INSPECTION; MAGNETIC PARTICLE WELD INSPECTION, IMPACT DAMAGE REPAIR; or ULTRASONIC WELD INSPECTION.

AIR CARBON ARC CUTTING AND GOUGING

1. All removal of web sections, transverse stiffener sections, and welds called for by the plans shall be accomplished using the air carbon arc process unless noted otherwise. Plasma cutting will be allowed. If the contractor plans to use plasma cutting the Bridge Construction Engineer shall be notified and will provide the Contractor with additional requirements for this cutting method.
2. Before any air carbon arc cutting or gouging begins, lay out all cut lines on the steel surfaces using a marker that will be visible during the cutting process.

NOTES (CONTINUED)
FOR
295' – 0" CONT. COMP. GIRDER BRIDGE

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AIR CARBON ARC CUTTING AND GOUGING (CONTINUED)

- 3. When grinding to a specified shape or dimension is required after air carbon arc cutting, lay out the shape on the steel surface with a visible marker and grind to the layout line. Air carbon arc gouging shall be done using DC, electrode positive.
- 4. Extreme care shall be exercised during the cutting or gouging process so that absolutely no damage (such as nicks, gouges, splattering) to the surrounding metal occurs. Any damage caused by the air carbon arc process shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Department.
- 5. Grind all surfaces cut or gouged with the air carbon arc process to remove high carbon deposits, provide a smooth finish, prepare metal for welding and/or to accept paint.

STATE FURNISHED ITEMS

- 1. State Furnished items are the transverse stiffener plate material. The state will furnish one 5" x 5/16" x 29" plate and one 6" x 3/8" x 29" plate. The state furnished stiffener plate material will be transported to the jobsite by State forces.
- 2. The state furnished stiffener plate material will need to be cut to the right length by the Contractor to be used for this project. Two stiffener plates shall be cut from each plate furnished. Cutting of the plate material shall be by the Air Carbon Arc process. The left over plate material shall become the property of the Contractor for his disposal. All costs including labor, equipment and any incidentals to modify the state furnished stiffener plate material for this project shall be incidental to the contract unit price per each for Remove and Replace Transverse Stiffener.
- 3. For excise tax purposes, the value of the state furnished items is \$196.32
- 4. Stiffener material cost shall not be included in the contract unit price per each for REMOVE AND REPLACE TRANSVERSE STIFFENER.

REMOVE AND REPLACE PORTIONS OF TRANSVERSE STIFFENER

- 1. A portion of the vertical stiffeners on Girder No. 1, at two diaphragm locations, will be removed and replaced to facilitate the partial web replacement at those locations.
- 2. All new steel plates shall be ASTM A709 Gr. 36 T2.
- 3. The vertical stiffeners shall be partially removed by the air carbon arc process, operated electrode positive. The cuts shall be made short and the web and flanges ground smooth to remove the remaining portion of the stiffeners and welds. Grinding shall be longitudinal. Transverse grinding will not be permitted. The Contractor shall use care during the removal process not to gouge or damage the web, flanges, adjacent vertical stiffeners or diaphragms in any way. The removed stiffener material shall be disposed of by the Contractor.

REMOVE AND REPLACE PORTIONS OF TRANSVERSE STIFFENER (CONTINUED)

- 4. The diaphragm to be detached from the existing stiffener to allow for placement of new stiffener as noted on the plans shall be removed by removing the fillet welds with the air carbon arc or plasma cutting process. Care shall be taken to ensure that the existing diaphragms are not damaged. Girder No. 1 diaphragm stiffener shall be removed and replaced per the Remove and Replace Transverse Stiffener note. The removed items shall be disposed of by the Contractor.
- 5. Web repairs shall be completed prior to the new stiffener material being placed.
- 6. All labor, materials, equipment, welding, field drilling of holes, cutting of copes and any incidentals necessary to remove and replace the vertical stiffeners, including detaching and reattaching the diaphragm, as shown on the plans will be incidental to the contract unit price per each for REMOVE AND REPLACE TRANSVERSE STIFFENER.

REMOVE AND REPLACE WEB SECTION

- 1. A portion of the web on Girder No. 1 at two diaphragm locations will be removed and replaced with this project. The web to be removed has been damaged by a vehicle impacting the girder adjacent to the diaphragm locations.
- 2. All new steel plates shall be ASTM A709 Gr. 36 T2. The limits of the existing cracks shall be field measured prior to ordering the new web plate. The contractor shall verify that all of the existing cracks shall lie within the limits of the new web plate shown in the plans. The web plate shown in the plans is the minimum size that will be allowed.
- 3. Cut and remove the portions of the web as shown on the plans by the air carbon arc process guided by a template. The air carbon arc process shall also be used to remove the web to bottom flange welds. All cut edges shall be ground smooth to their final size in preparation for welding. Grinding shall be longitudinal. Transverse grinding will not be allowed. The removed portions of the web shall be disposed of by the Contractor.
- 4. All labor, equipment, materials, welding and any incidentals necessary to replace the portions of the web shall be incidental to the contract unit price per each for REMOVE AND REPLACE WEB.

REMOVAL OF SURFACE NICKS AND GOUGES

- 1. The bottom flange of Girder No. 1 has been impacted by a vehicle. The intent of this construction is remove the sharp edges, nicks and surface gouges from this vehicle impact.
- 2. Grind the bottom flange of Girder No. 1 as directed by the Engineer, to remove all sharp edges from surface nicks and gouges created by vehicle impact. The amount of material removed shall be kept to the absolute minimum necessary to remove the sharp edges and to minimize the section reduction of the existing structural members. Grinding shall be longitudinal. Transverse grinding will not be allowed.
- 3. All surface nicks and gouges shall be checked by non destructive MT testing after grinding--see Weld Inspection & Nondestructive Testing (NDT) note. Repair options for the defects found by the non destructive testing shall be determined by the Bridge Construction Engineer.
- 4. All costs associated with removing sharp edges from surface nicks and gouges including all materials, equipment and labor shall be incidental to the contract unit price per square inch for SURFACE GRINDING OF STRUCTURAL STEEL. Estimated quantity is 21 square inches. This quantity is included to establish bid prices. SURFACE GRINDING OF STRUCTURAL STEEL will be used and paid for only as determined by the Engineer.

REMOVAL OF EXISTING STEEL

The existing steel to be replaced shall be completely removed and either salvaged by the Contractor or disposed of in accordance with the waste disposal site note located on Sheet No. 5 of 12. If the existing steel is to be salvaged, it must be removed from view of the ROW to the satisfaction of the Engineer prior to project completion.

NOTES (CONTINUED)
FOR
295' – 0" CONT. COMP. GIRDER BRIDGE

Str. No. 15-215-120

MARCH 2012

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	8	15

INCIDENTAL WORK, STRUCTURE

The following shall all be considered INCIDENTAL WORK, STRUCTURE:

1. The defined area on Girder No. 1 for MT inspection, impact damage, shall be solvent cleaned to SSPC SP-1 prior to any other work being done on the structure. For informational purposes only the area to be cleaned shall be no less than 42 square inches.
2. All power tool cleaning performed by the Contractor in preparation for Nondestructive Testing shall be in accordance with SSPC SP-3.
3. All materials, labor, equipment, and any incidentals necessary to perform all that is described in the notes above shall be incidental to the contract Lump Sum price for "INCIDENTAL WORK, STRUCTURE."

PAINT RESIDUE REMOVAL AND CONTAINMENT

Contain and collect all of the existing paint residue and/or abrasive blasting media according to Section 412.3.B of the Standard Specifications.

BRIDGE REPAINTING, CLASS I

1. All work affected areas and all new structural steel shall be painted.
2. All work affected areas and all new structural steel shall be painted in accordance with Section 412 of the Standard Specifications and in accordance with SSPC Standard PA1. Contain and collect all of the existing paint residue and/or abrasive blasting media according to Section 412 of the Construction Specifications. For informational purposes, 373 square feet of structural steel will require painting.
3. Paint color

Top Coat - The paint color shall be an approved green color to match the existing paint. Prior to ordering the paint, a paint chip of the green color shall be submitted to the Department for color approval.

Primer or Intermediate Coats - Colors shall sharply contrast with each other and with the top coat.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

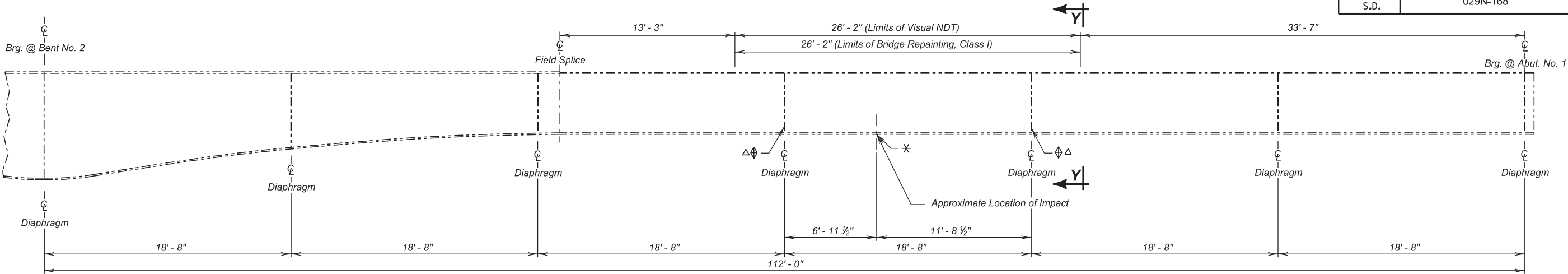
NOTES (CONTINUED)
FOR
295' – 0" CONT. COMP. GIRDER BRIDGE

Str. No. 15-215-120

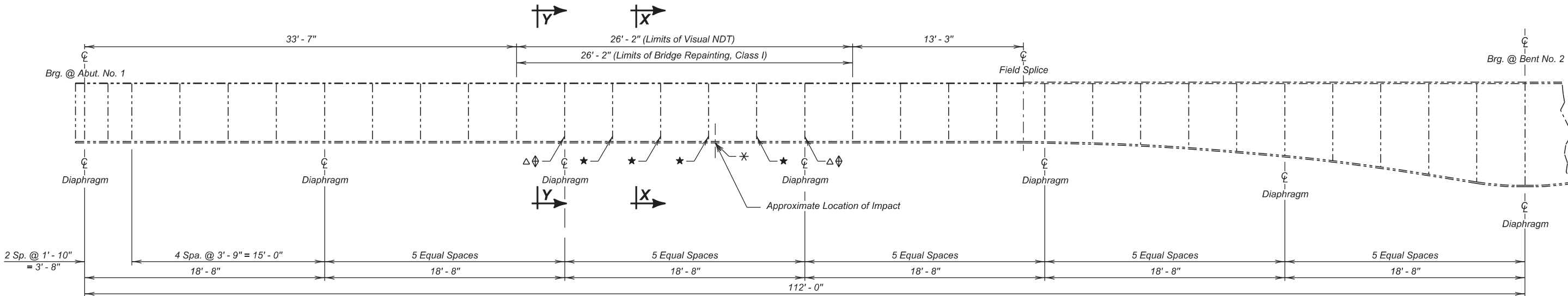
MARCH 2012

5 OF 12

DESIGNED BY: EJA CODI24d	DRAWN BY: EJA I24dNOTA	CHECKED BY: DJS	 BRIDGE ENGINEER
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NORTH FACE OF GIRDER NO. 1
(See Layout sheet for location on structure)



SOUTH FACE OF GIRDER NO. 1

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Incidental Work, Structure	LS	Lump Sum
Remove and Replace Web	Each	2
Remove and Replace Transverse Stiffener	Each	4
Surface Grinding of Structural Steel	SqIn	21
Magnetic Particle Weld Inspection	In	56
Ultrasonic Weld Inspection	In	6.2
Magnetic Particle Weld Inspection, Impact Damage Repair	SqIn	42

⊗ Transverse stiffener material will be State Furnished

GIRDER NO. 1 REPAIR DETAILS

FOR

295' - 0" CONT. COMP. GIRDER BRIDGE

32' - 0" ROADWAY 0° SKEW
OVER I-29 SEC. 3/34-T117/118N-R52W
STR. NO. 15-215-120 029N-168

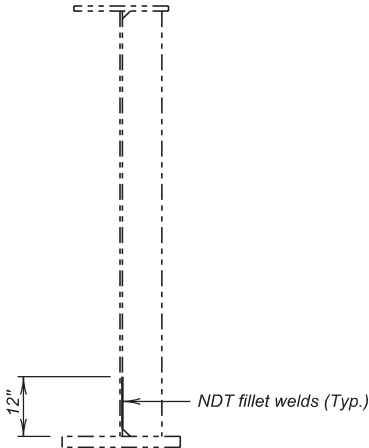
CODINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

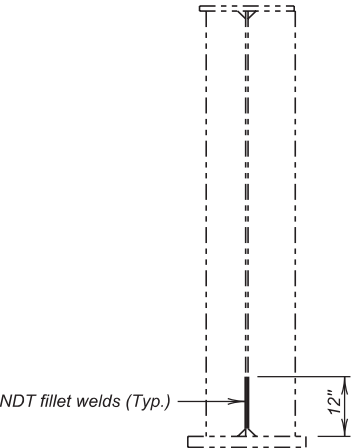
MARCH 2012

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- ⊕ Partially Remove and Replace Stiffener
- △ Partially Remove and Replace Web - See Detail "X"
- ★ Weld Inspection
- ✱ Grind



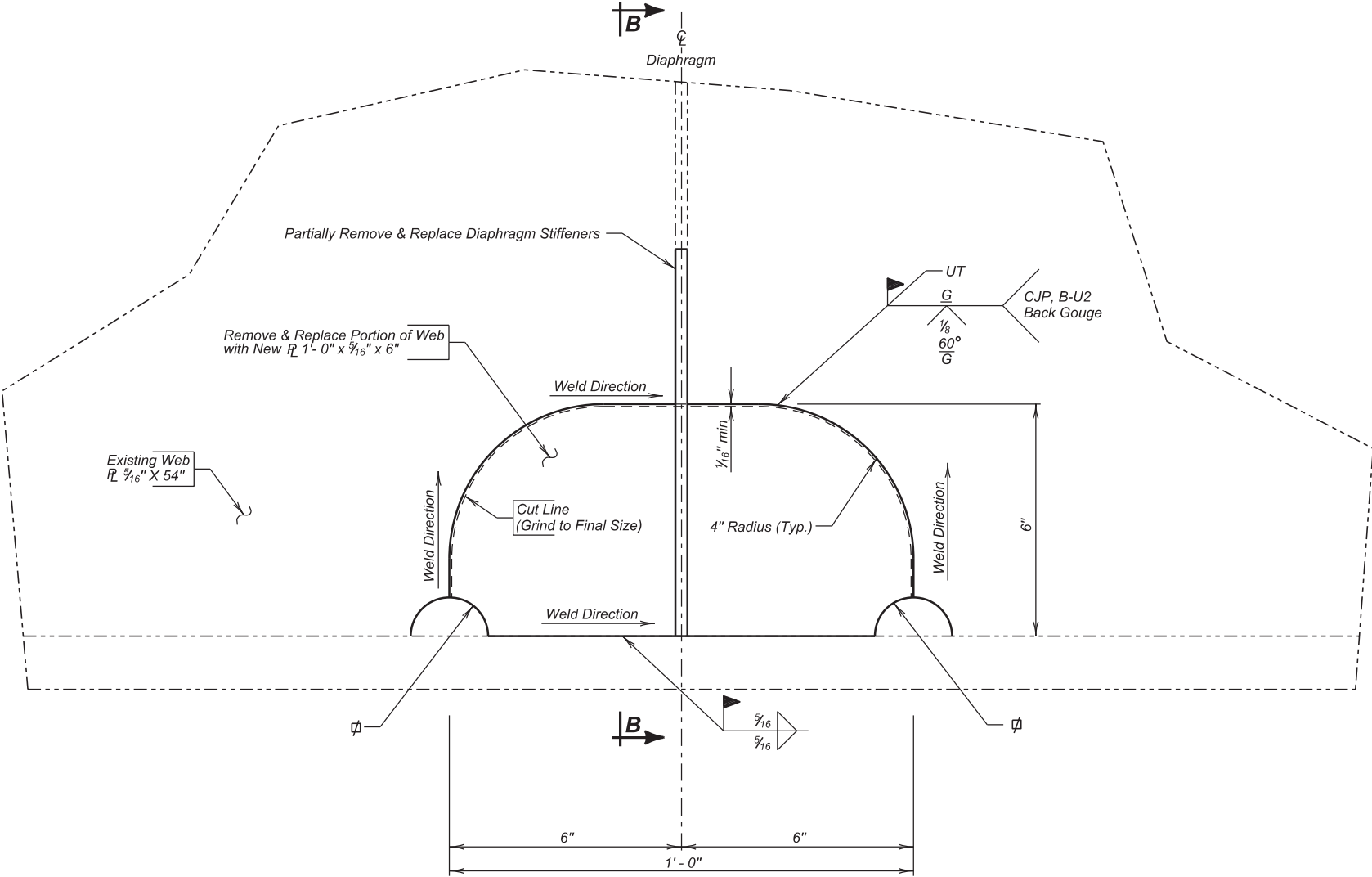
SECTION X - X



SECTION Y - Y

NOTES :
Concrete deck not shown for clarity.
This sheet is to be used in conjunction
with Sheet Nos. 7 through 9 of 12.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	10	15



DETAIL "X"

Ø Using the Air Carbon Arc Process, cut a 7/8" radius cope in the web prior to cutting the remainder of the web section out. After the new web section has been welded into place, resize the cope to a 1" radius by grinding the cut surface ensuring the weld tips are ground out. The finished surface shall be smooth.

NOTE :
This sheet is to be used in conjunction
with Sheet Nos. 6, 8 & 9 of 12.

GIRDER NO. 1 WEB REPAIR DETAILS
FOR
295' - 0" CONT. COMP. GIRDER BRIDGE
32' - 0" ROADWAY 0° SKEW
OVER I-29 SEC. 3/34-T117/118N-R52W
STR. NO. 15-215-120 029N-168

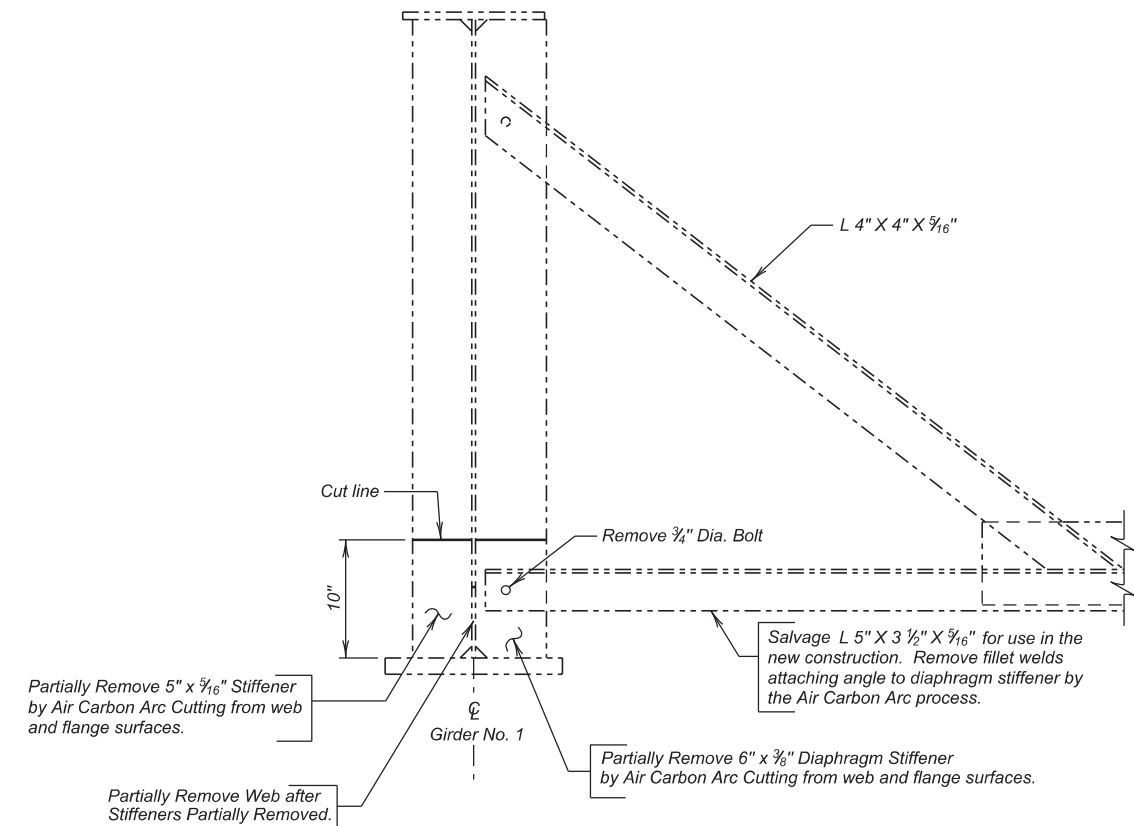
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION

MARCH 2012

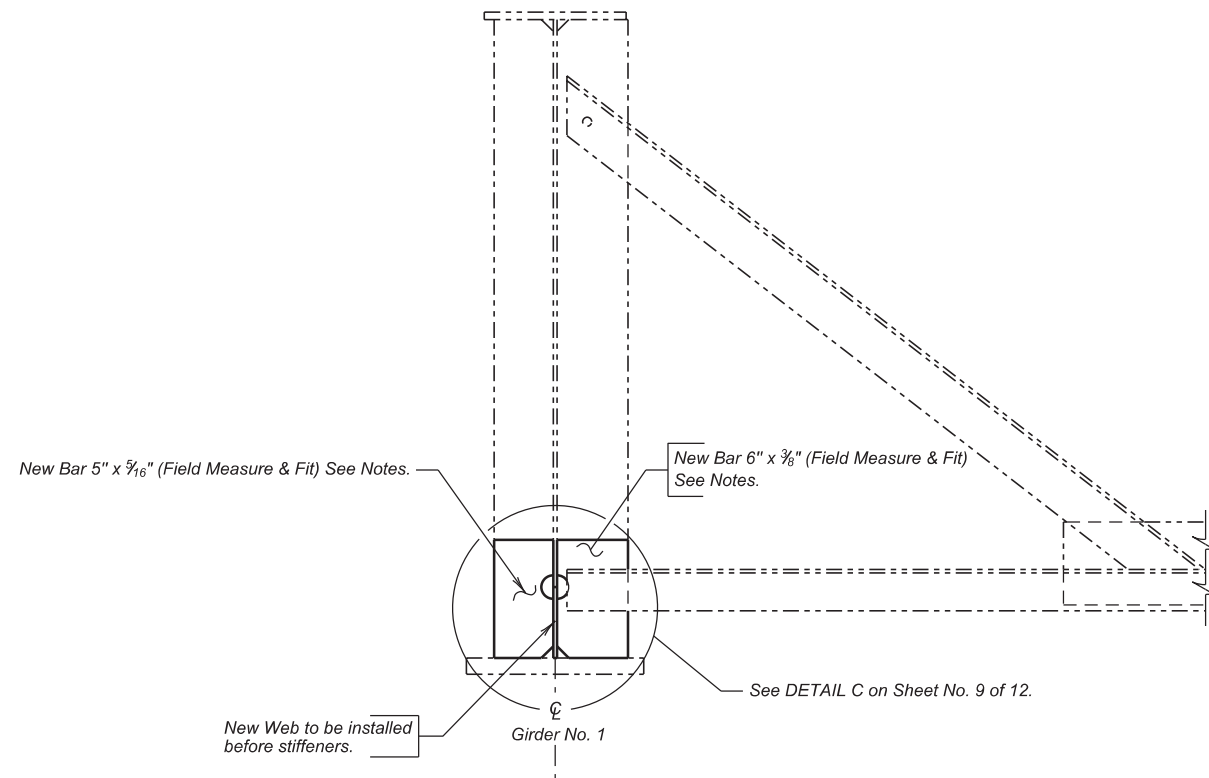
7 OF 12

DESIGNED BY DJS CODNI24D	DRAWN BY DJS I24DSA07	CHECKED BY EJA	Kevin N. Goeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	11	15



SECTION B - B
(Existing Section showing removal items)
(For location of Section, see Sheet No. 6 of 12)



SECTION B - B
(New Section showing reconstruction)
(For location of Section, see Sheet No. 6 of 12)

NOTES :

This sheet is to be used in conjunction with Sheet Nos. 6, 7 & 9 of 12.

Concrete Deck Slab Not Shown for Clarity.

GIRDER NO. 1 STIFFENER REPAIR DETAILS

FOR

295' - 0" CONT. COMP. GIRDER BRIDGE

32' - 0" ROADWAY 0° SKEW
OVER I-29 SEC. 3/34-T117/118N-R52W
STR. NO. 15-215-120 029N-168

CODINGTON COUNTY

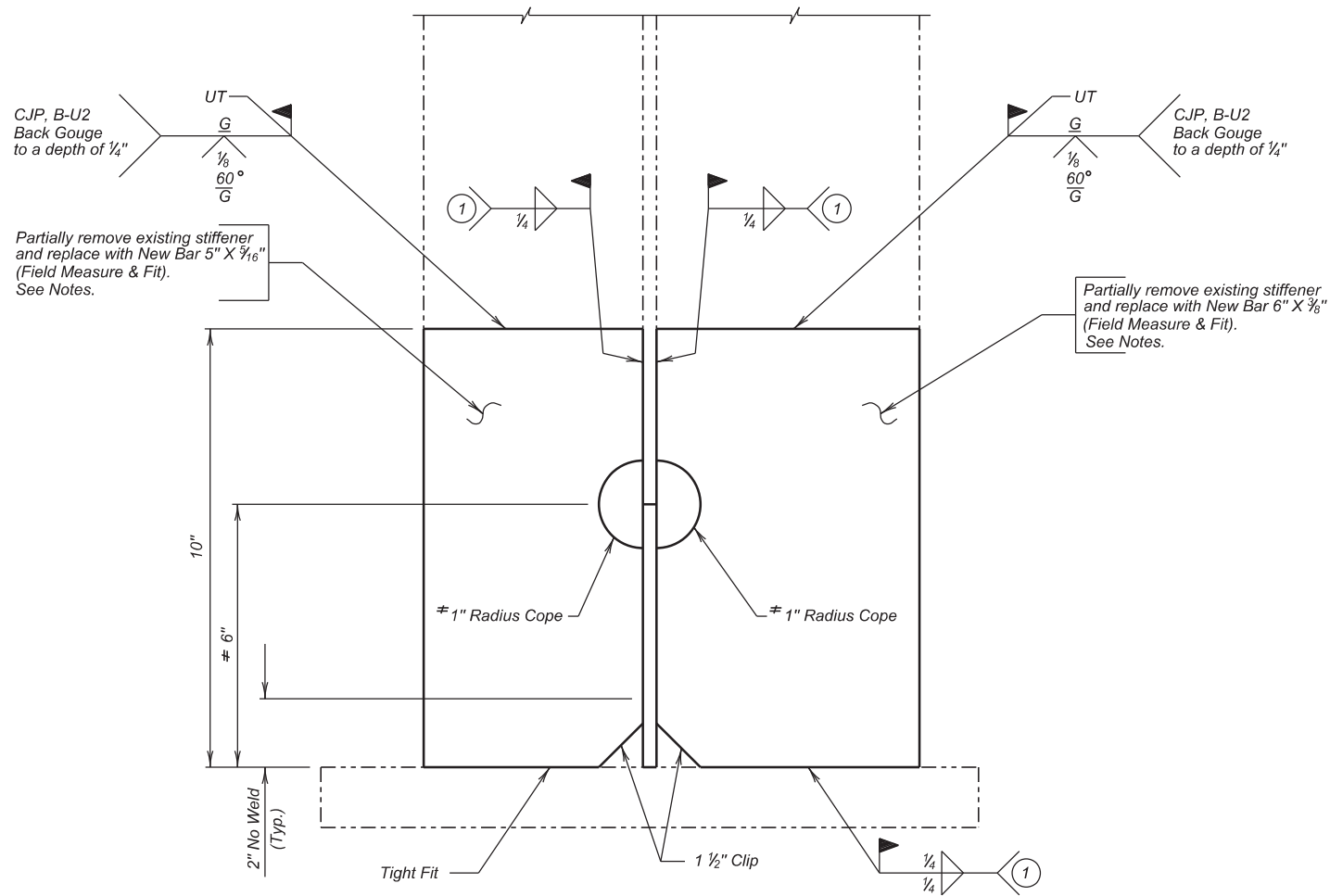
S. D. DEPT. OF TRANSPORTATION

MARCH 2012

8 OF 12

DESIGNED BY DJS CODNI24D	DRAWN BY DJS I24DSA08	CHECKED BY EJA	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	12	15

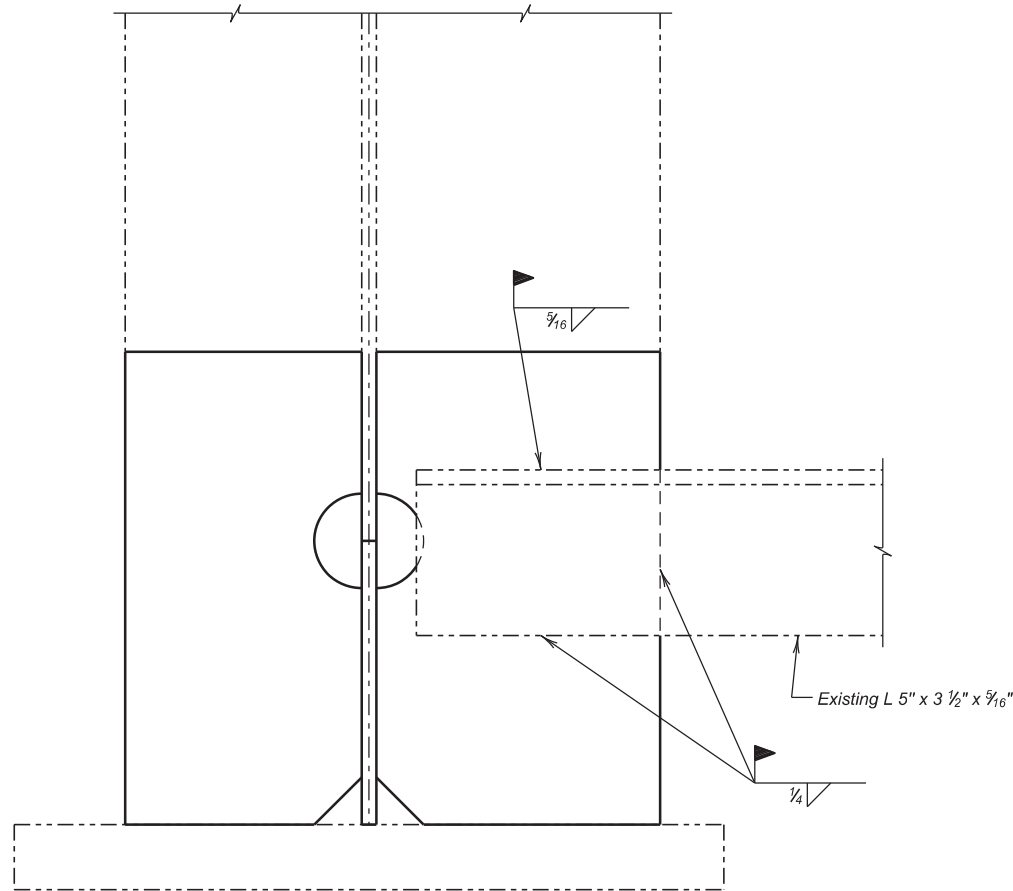


DETAIL C
(Stiffener Bar Replacement Details)
(L 5" x 3 1/2" x 5/16" not shown for clarity)

≠ Stiffener cope shall straddle web plate replacement weld to ensure there are no intersecting welds. After welding, grind to a smooth finish. The cope shall be located and cut in the field to ensure proper placement.

(1) All fillet welds attaching stiffeners to girder flanges and webs shall terminate 1/2" from edge of stiffener, flange, or stiffener clip, whichever is applicable.

NOTES :
This sheet is to be used in conjunction with Sheet 6, 7 & 8 of 12.
Concrete Deck Slab Not Shown for Clarity.



DETAIL C
(Diaphragm Re-Attachment Detail)

GIRDER NO. 1 STIFFENER REPAIR DETAILS

FOR
295' - 0" CONT. COMP. GIRDER BRIDGE
32' - 0" ROADWAY 0° SKEW
OVER I-29 SEC. 3/34-T117/118N-R52W
STR. NO. 15-215-120 029N-168

CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2012

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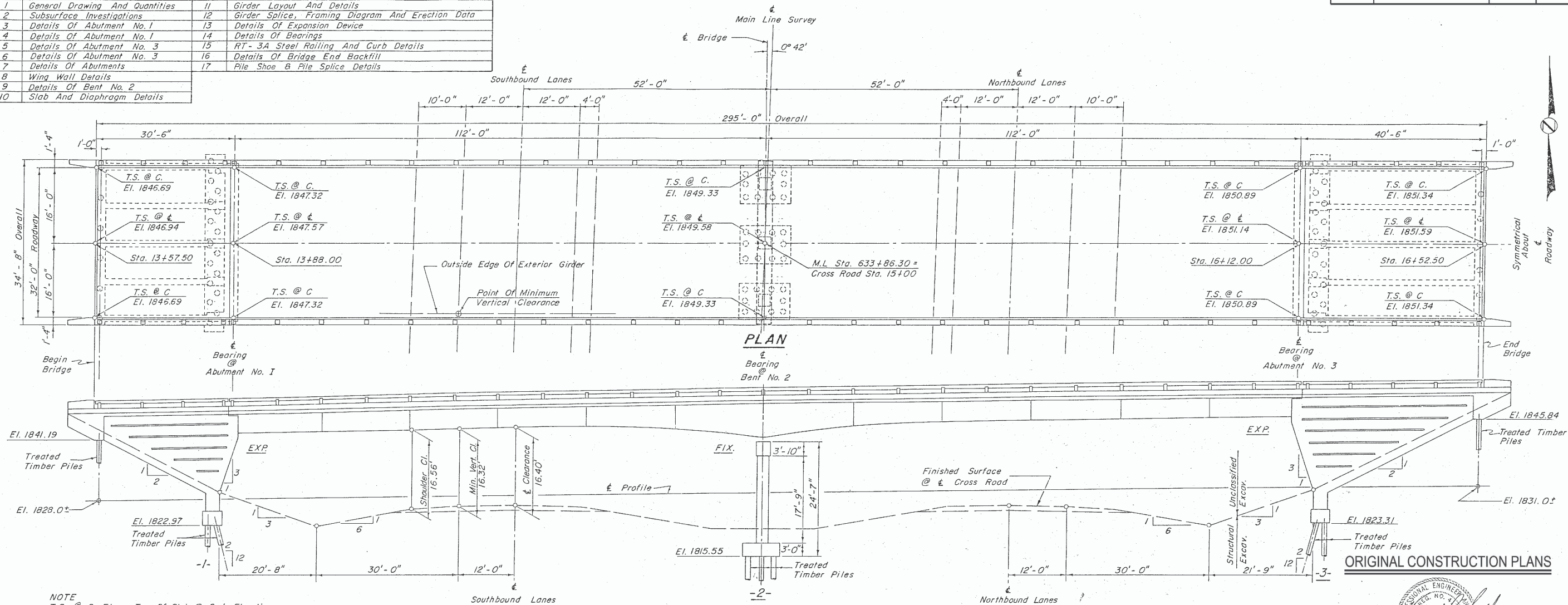
DESIGNED BY DJS CODNI24D	DRAWN BY DJS I24DSA09	CHECKED BY EJA	Kevin N. Goeden BRIDGE ENGINEER
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INDEX OF BRIDGE SHEETS			
SH. No.	TITLE	SH. No.	TITLE
1	General Drawing And Quantities	11	Girder Layout And Details
2	Subsurface Investigations	12	Girder Splice, Framing Diagram And Erection Data
3	Details Of Abutment No. 1	13	Details Of Expansion Device
4	Details Of Abutment No. 1	14	Details Of Bearings
5	Details Of Abutment No. 3	15	RT-3A Steel Railing And Curb Details
6	Details Of Abutment No. 3	16	Details Of Bridge End Backfill
7	Details Of Abutments	17	Pile Shoe & Pile Splice Details
8	Wing Wall Details		
9	Details Of Bent No. 2		
10	Slab And Diaphragm Details		

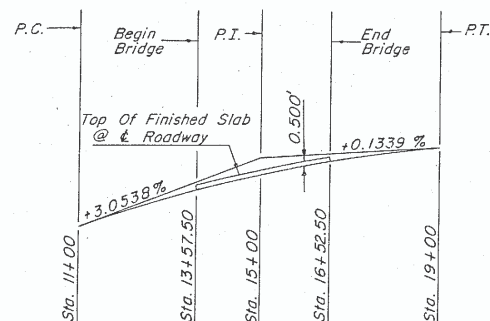
B.M. No. 91 Elev. 1809.63
Iron Pin
263' Rt. Sta. 619+76

B.M. No. 92 Elev. 1823.11
Iron Pin
377' Rt. Sta. 634+22

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029N-168	13	15



NOTE
T.S. @ C. El. = Top Of Slab @ Curb Elevation
T.S. @ E. El. = Top Of Slab @ E. Elevation



GENERAL NOTES

- Design Specifications: A. A. S. H. O. Specifications For Highway Bridges, 1969 And Interim Specification, 1970-71
- See Notes On Sheet No. 2 Through No. 15.
- Longitudinal Elements Of The Slab Shall Conform To The Cross Road Vertical Curve.
- Rail Posts Shall Be Built Normal To The Grade.
- All Reinforcing Steel Shall Conform To A. S. T. M. Specifications A 615, Grade 40.
- Unit Stresses: Reinforcing Steel - fs 20,000 p.s.i.
Concrete - Slab - fc 1,350 p.s.i.
Abutments & Bent - fc 1600 p.s.i.
- Design Loading: HS 20-44 A. A. S. H. O.
- The Contractor Shall Have Sufficient Pile Splice Material On Hand Before Pile Driving Is Started. For Details See Standard Plate No. 303.1.
- For Steel Pile Shoes See Standard Plate No. 301.
- Standard Plates Referred To In These Plans Are The Plates Printed On Sheet No. 17 Of These Plans And Are Not Intended To Be Referred To The Standard Plates Manual.
- The Contractor Shall Imprint On The Structure The Date Of Construction As Specified And Detailed On Standard Plate No. 308, Which Is On File With The Engineer.
- Pebble Holes For 6 Piles At The Beginning Of Abutment No. 1 And For 7 Piles At The End Of Abutment No. 3

SPECIFICATION NOTE

Use South Dakota Standard Specifications For Roads And Bridges, 1969 Edition, And Required Provisions, Supplemental Specifications And /or Special Provisions As Included In The Proposal. All Concrete Shall Be Class "A" (Type II Cement)

	Tim Pile FURN	Tim Pile D.R.	Test Pile FURN	Test Pile D.R.	STR EXC	10BP42 FURN	10BP42 D.R.	Test 10BP42 FURN	Test 10BP42 D.R.
ABT#1	117.0	102.1	55.0	28.0	95.4	4500	403.2	45.0	35.0
2	725.0	607.4	30.0	25.8	98.6				
3	450.0	375.2	60.0	48.2	90.9				
Total	1292.0	1086.7	145.0	102.0	284.9	4500	403.2	45.0	35.0

ESTIMATED QUANTITIES											
Item	Class "A" Concrete Bridge Cu. Yds.	Reint. For Cond. Masonry Lbs.	Steel Structural Lbs.	Steel Railing Type RT-3A Lin. Ft.	Treated Timber (Lin. Ft.) 6" Timber Test (Lin. Ft.)	Piling Driving	Excavation Structure Bridge Cu. Yds.	Unclassified Cu. Yds.	Preboring Piling Lin. Ft.	Bridge End Backfill Lump Sum	Pile Shoes Steel Each
Superstructure	210.2	51,070	190,750	452	6 @ 25 = 155	5 @ 25 = 125	1 @ 30 = 30	1 @ 30 = 30			
Abutment No. 1	122.1	28,035	56	60.33	16 @ 20 = 320	16 @ 20 = 320	1 @ 25 = 25	1 @ 25 = 25	79		23
Bent No. 2	52.2	7,390			29 @ 25 = 725	29 @ 25 = 725	1 @ 30 = 30	1 @ 30 = 30			28
Abutment No. 3	60.3	32,147	56	80.33	6 @ 25 = 150	6 @ 25 = 150	1 @ 40 = 40	1 @ 40 = 40	102		24
Total	444.8	112,622	190,862	592.67	1620	1620	145	145	328	Lump Sum	75

⊕ Two Treated Timber Test Piles Shall Be Driven At Abutments No. 1 And No. 3, And One Treated Timber Test Pile Shall Be Driven At Bent No. 2 - Before The Remaining Piles Are Ordered

△ All Unclassified Excavation To Be Done By Others.

* For Information Only, The Approximate Amount Of Granular Backfill Required Will Be 160 Cu. Yds. And The Length Of 6" @ Perforated And 6" @ Nonperforated Metal Pipe Will Be 103 Lin. Ft. See Notes On Sheet No. 16 Of 17.

GENERAL DRAWING AND QUANTITIES

FOR
295'-0" CONT. COMP. GIRDER VIADUCT
32'-0" ROADWAY OVER I29-7(8)178
M.L. STA. 633+86.30
SEC. 3 & 34 T117N-T118N-R52W

CODINGTON COUNTY HS 20-44
SOUTH DAKOTA DEPARTMENT OF HIGHWAYS
-X771- STR. NO. 15-215-120-

SOUTH DAKOTA DEPARTMENT OF HIGHWAYS

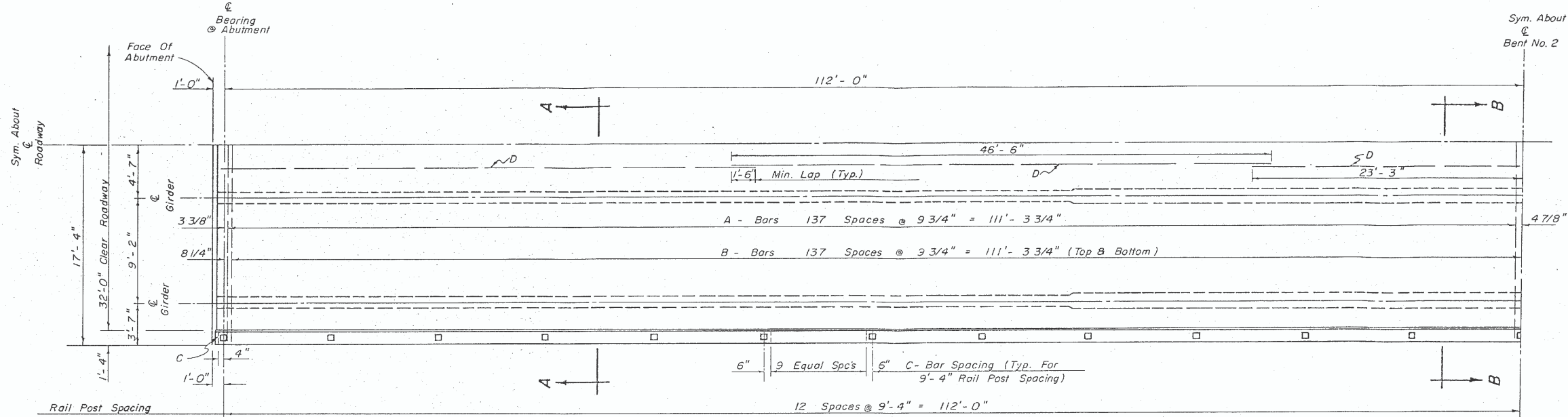
Codington County, South Dakota

Approved By _____

SCOTT ENGINEERING COMPANY
Watertown, South Dakota

BY DATE
Designed WLS. 8/1969
Drawn J.C.S. 9/1969
Rev. WLS. 4/1972

Sheet No. 10 OF 12



QUARTER PLAN

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
Class "A" Concrete	Cu. Yds.	210.2	
Reinforcing Steel	Lbs.	51,050	
Structural Steel	Lbs.	190,750	
RT 3A Steel Railings	Lfd. Ft.	452	

REINFORCING STEEL SCHEDULE					
MK	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
A	276	5	35'- 3"	15A	<p>11"</p> <p>1'- 4 1/2"</p> <p>1'- 1 3/4"</p> <p>Sym. About TYPE T1A</p>
B	550	5	34'- 3"	Str.	
C	494	4	5'- 7"	T1A	
D	400	5	46'- 6"	Str.	
DI	4	5	12'- 0"	Str.	

5'- 5 5/8"

4 3/4"

4'- 2 1/4"

4 3/4"

4'- 2 1/4"

4 3/4"

2'- 1 1/8"

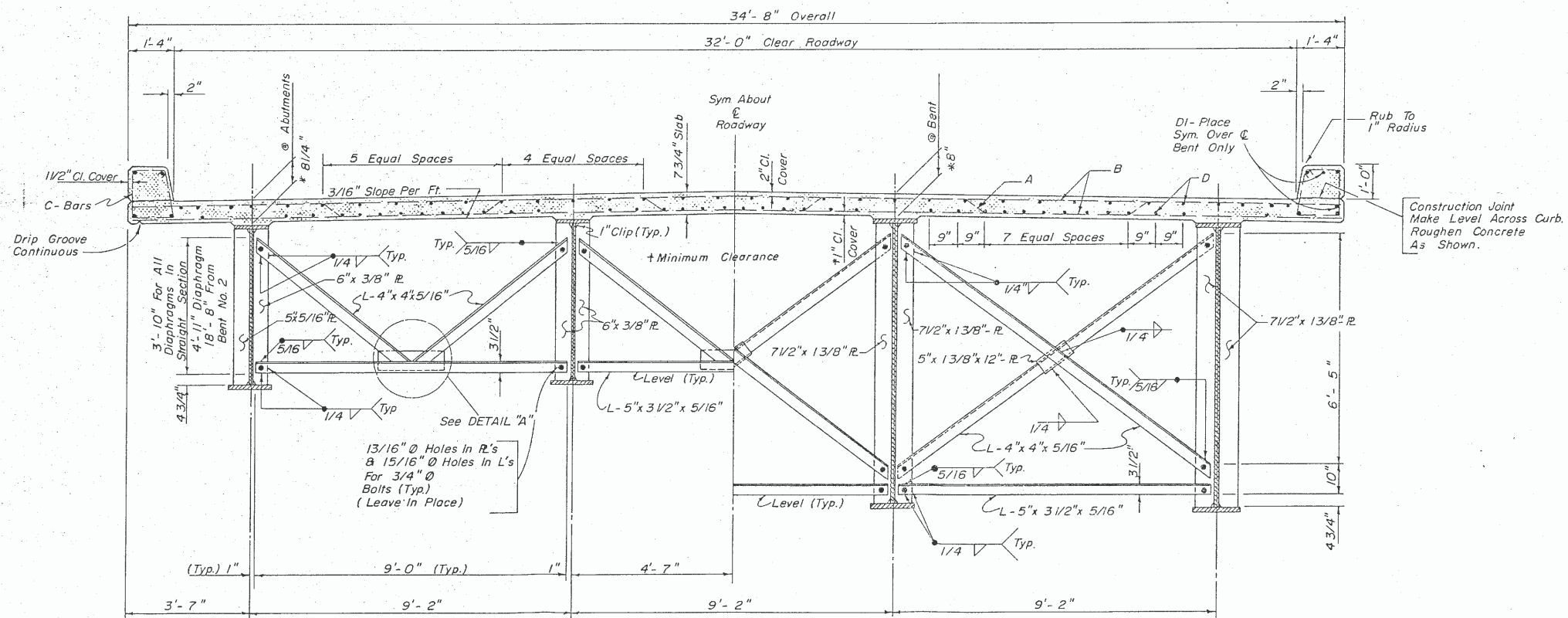
13 3/4"

6 3/4"

17'- 1 1/2"

TYPE 15A

NOTE: All Dimensions Are Out To Out Of Bars.



SECTION A-A

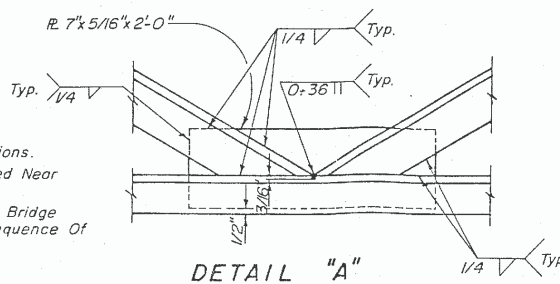
SECTION B-B

(TYPICAL FOR ALL DIAPHRAGMS EXCEPT AT BENT)

CONCRETE POURING NOTES

Concrete Slab May Be Poured Continuously Provided Approved Concrete Retarders Are Used And The Contractor Has Demonstrated Capacity For Such Continuous Operations. Transverse Construction Joints Are Permitted In The Slab And Shall Be Positioned Near The Girder Field Splices Or At Approximately The 1/3 Points From C. Of Bent. If Transverse Construction Joints Are Used The Contractor Shall Submit To The Bridge Section For Approval, Plans And Details Of Construction Joints Used, As Well As Sequence Of Pouring. Curbs Shall Be Poured After All Slab Has Been Poured.

NOTE:
* Denotes Dimension At C. Bearings. At Other Points Along The Girders This Dimension Shall Be Computed As Shown On The Erection Data Sheet.



DETAIL "A"

ORIGINAL CONSTRUCTION PLANS

SLAB AND DIAPHRAGM DETAILS
FOR
295'-0" CONT. COMP GIRDER VIADUCT
32'-0" ROADWAY OVER I 29-7(B)178
M.L. STA. 633+86.30
SEC. 3 & 34 T117N - T118N
CODINGTON COUNTY HS 20-44
SOUTH DAKOTA DEPARTMENT OF HIGHWAYS
STR. NO. 15-215-120

SOUTH DAKOTA DEPARTMENT
OF HIGHWAYS

Codington County, South Dakota

Approved By _____

SCOTT ENGINEERING COMPANY
Watertown, South Dakota

BY	DATE	Sheet No. 11 OF 12
Designed	W.L.S. 8/1969	
Drawn	M.D.B. 8/1969	
Revised	W.L.S. 4/1972	

